NRO APPROVED FOR
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NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

ST15773-63KH
TCS-1805-63/KH
Copy 1

9 July 1963

MEMORANDUM FOR: Director, National Reconnaissance Office

ATTENTION : Director, National Reconnaissance Staff

SUBJECT : Photo Requirements of New Systems

REFERENCE : NRO Memo, dated 16 May 1963, subject: Request for NPIC Comments on Photo Requirements (SAFSS ST 15669-63KH)

1. The criteria set forth in COMOR D-13/4 and COMOR D-13/6 are considered feasible and in fact are not as stringent as they might be if we intend to push the "state of the art" to best obtain technical information from satellite reconnaissance. The following comments are provided for your information:

a. COMOR-D-13/4 states there is a national requirement wherein recognizable objects ten (10) feet on a side should be measurable to within 20 percent of their true dimension, i. e., two (2) feet of error in 10 feet. In addition, there is a requirement that would permit the measurement of low contrast objects five (5) feet on a side measurable to within an accuracy of 10 percent, or one-half foot of error in five (5) feet. These are valid requirements. NPIC, however, would prefer that the requirements have closer tolerances. Those which COMOR requests to within 20 percent should be measurable to within an error of no more than 20 percent of their true dimensions; likewise, to within an error of no more than 10 percent in the case of objects five (5) feet on a side.

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b. It should be noted that within a given frame of photography large objects can usually be measured to a higher degree of accuracy than smaller objects. There is a direct relationship between system design objectives, individual system performance and measurement capabilities. Within a given system the capability to measure will vary from mission to mission.

c. Furthermore, the speed of the film, its granularity, stability, resistance to radiation and other factors all have a direct effect on the size and quality of the image that will be recorded. Films are designed with certain base and emulsion characteristics which are tailored to provide specific results. Each emulsion and base combination is established to give results which are dependent upon a prescribed set of exposure and processing conditions. Any major deviation from these conditions will result in apparent degradation. Emulsions fine in grain, high in definition and medium in apparent contrast normally provide the PI and Photogrammetrist with the best work copy. With our present camera and vehicle combination, SO-132 has given the best results with satellite photography; however, should camera characteristics be changed, or new cameras be employed the results may not be comparable.

d. The employment of a combination of special sensor types of photography or color film along with regular photography can, under certain conditions, be an asset to the PI. It is felt that such combinations hold a strong potential for establishing a "quantum jump" in expanding the scope of PI analysis.

2. Should there be any additional information you require, please call on us and we will make every effort possible to provide it as soon as possible.

Arthur C Lundahl
ARTHUR C. LUNDAHL
Director

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